**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Pursell, Gary
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-012927
**Date Inspected:** 05-Apr-2010

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** American Bridge/Fluor Enterprises, a JV

**OSM Arrival Time:** 1100
**OSM Departure Time:** 1930
**Location:** Job Site

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|---|---|---|---|---|---|---|---|
| **CWI Name:** | See Below | | | **CWI Present:** | ☑ Yes | ☐ No | |
| **Inspected CWI report:** | ☐ Yes | ☑ No | ☐ N/A | **Rod Oven in Use:** | ☑ Yes | ☐ No | ☐ N/A |
| **Electrode to specification:** | ☑ Yes | ☐ No | ☐ N/A | **Weld Procedures Followed:** | ☑ Yes | ☐ No | ☐ N/A |
| **Qualified Welders:** | ☑ Yes | ☐ No | ☐ N/A | **Verified Joint Fit-up:** | ☑ Yes | ☐ No | ☐ N/A |
| **Approved Drawings:** | ☑ Yes | ☐ No | ☐ N/A | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☑ No | ☐ N/A |

**Bridge No:** 34-0006
**Component:** Orthotropic Box Girders

**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the E1/E2 E3/E4 and W1/W2 field splices:

A). Welding of the Field Splice E1to E2.
B). QAI Verification of QC/UT (Repairs)
C). Welding of the Backing Bar at W1 to W2
D). Removal of Temporary Attachments

A) Field Splice E1/E2, WN: 1E/2E-E

The QAI observed Flux Cored Arc Welding (FCAW-G) on the "B" Side of the Complete Joint Penetration (CJP) performed by AB/F welding personnel Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3042A Rev. 0. The WPS was also used by the Quality Control (QC) inspector Mike Johnson as a reference to verify the Direct Current Electrode Positive (DCEP) welding parameters and were verified by the QAI accordingly: 236 amps and 23.4 volts and a travel speed measured at 220 mm/minute. The minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was also verified by the QAI and appeared to comply with the contract documents.

B) UT Verification

The QAI verified QC/UT, utilizing a USN 60 UT instrument a G.E. Technologies Product, on the bottom plate field splice identified as Weld Number (WN): 1E-2E-D. The testing was performed to verify rejectable discontinuities noted by QC. The testing was performed utilizing the longitunial wave technique for base metal soundness and the shear wave technique for weld soundness. The QAI verified approximately 17 areas of noted rejects and at the conclusion of the verification the QAI results concur with QC.

C) Welding of Backing Bar at Field Splice W1/W2

The QAI observed the Shielded Metal Arc Welding (SMAW) of the backing bar to the W1 deck plate performed by AB/F welding personnel Jordan Hazelaar ID-2135 and Kenneth Chappell ID-3833. The fillet welding was performed utilizing the WPS identified as ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector Bonifacio Daquinag, Jr. during the QC verification of the DCEP welding parameters which were observed and noted by the QAI were as follows: 122 amps for the welder Mr. Hazelaar and 128 amps for the welder Mr. Chappell. The surface temperatures were maintained during the CJP welding and were noted by the QAI as 10 degrees Celsius minimum preheat temperature and the maximum interpass temperature of 230 degrees Celsius.

D) Removal of Temporary Attachments at OBG Splice

The QAI observed the removal of the assembly gear fitting aids utilized to align the bottom plate field splices of Orthotropic Box Girders (OBG) identified as E3/E4 field splice (WN: 3E-4E-D). The work was performed by Rick Clayborn utilizing a 4" grinder to remove the temporary attachments.

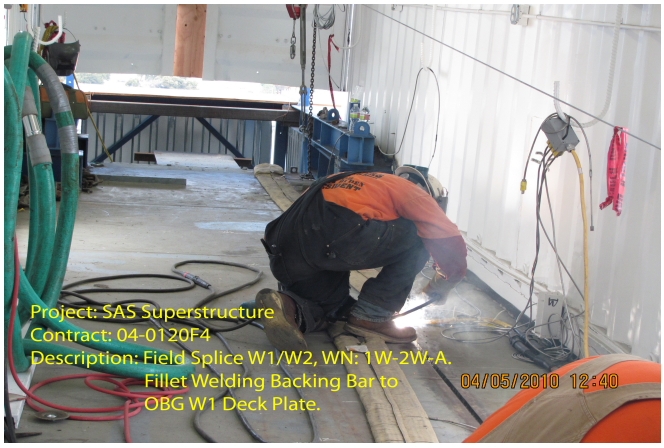
QA Observation and Verification Summary

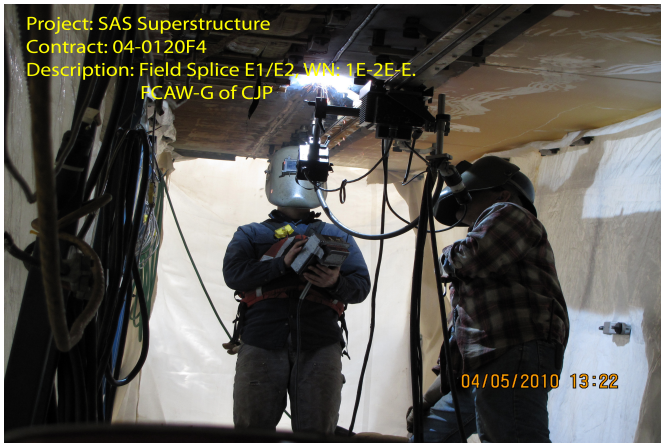
The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector's and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The consumables utilized for the SMAW and FCAW-G processes appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed and appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter, Tempilstik Temperature indicators and a USN 60 Ultrasonic instrument.

The digital photographs on page 3 of this report, illustrates the work observed during this scheduled shift.

# WELDING INSPECTION REPORT

*( Continued Page 3 of 3 )*




**Summary of Conversations:**

There were no pertinent conversations discussed in regards to the project except as noted above.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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|---|---|---|
| **Inspected By:** | Reyes,Danny | Quality Assurance Inspector |
| **Reviewed By:** | Levell,Bill | QA Reviewer |